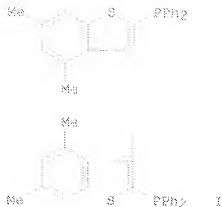


10/550,140

PATENT ASSIGNEE(S): **Primaatco, Lidia**  
 SOURCE: **Italfarmaco Sud S.p.A., Italy**  
 ECT Int. Appl., 68 pp.  
 CODEN: **PJXXDZ**  
 DOCUMENT TYPE: **Patent**  
 LANGUAGE: **English**  
 FAMILY ACC. NUM. COUNT: **1**  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9601231	A1	19960105	WO 1995-EP2647	19950707
W: AM, AU, BE, BG, BR, BY, CA, CN, CZ, DE, FI, GE, HU, IS, JP, KG, KP, KR, KZ, LK, LR, LT, LV, MD, MG, MN, MX, NO, NZ, PL, RO, RU, SG, SI, SK, TJ, TM, TT, UA, UG, US, UZ, VN				
RW: KE, MW, SD, SZ, UG, AT, BE, CA, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SF, SJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
CA 2193889	A1	19960125	CA 1995-2193889	19950707
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AU 9550764	A	19960209	AU 1995-30764	19950707
AU 685680	B2	19960122		
EP 770085	A1	19970502	EP 1995-943147	19950707
EP 770085	B1	19990322		
R: AT, BE, CA, DE, DK, ES, FR, GB, GR, IE, IT, LI, NL, PT, SE				
HU 75927	A2	19970630	HU 1997-54	19950707
HU 221381	B1	20020928		
JP 10502387	T	19980303	JP 1996-504117	19950707
JP 3330611	B2	20030930		
CN 1150397	A	19980812	CN 1995-194093	19950707
AT 184873	T	19991015	AT 1995-943147	19950707
ES 2136856	T3	19991201	ES 1995-943147	19950707
CZ 293465	B6	20040512	CZ 1997-83	19950707
US 5907045	A	19990525	US 1996-765479	19961223
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GR 3931443	T3	20000631	GR 1999-402532	19991007
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PRIORITY APPL. INEQ.:			IT 1994-M11438	A 19940712
			WO 1995-EP2647	W 19950707
			US 1996-765479	A3 19961223
			US 1999-286583	A3 19990405

OTHER SOURCE(S): **CASREACT 124:317487; MARPAT 124:317487**  
 GI



AS Chiral diphosphines constituted by an aromatic pentat, biheterocyclic system, suitable to act as chiral ligands, complexes between said diphosphines and transition metals, and their utilization as chiral catalysts in stereoccontrolled reactions, such as diastere- and enantioselective reduction reactions is described. Process for the preparation of said chiral diphosphines and process for the preparation of said complexes and for their utilization as chiral catalysts in stereoccontrolled reactions is discussed. Thus, lithiation of 3-bromo-4,6-dimethylbenzo[b]thiophene with BuLi in Et<sub>2</sub>O followed by treatment with CuCl<sub>2</sub> and acidic workup gave 4,4',6,6'-tetramethyl-3,3'-dibenzo[b]thiophene (I). Lithiation of I with BuLi in THF/TMEDA followed by phosphinylation with Ph<sub>2</sub>PCl gave

1,1'-bis(diphenylphosphino)-4,4',6,6'-tetramethyl-3,3'-dibenzo[b]thiophene (II). Oxidation of II with H<sub>2</sub>O<sub>2</sub>, resolution of the phosphine oxide, followed by BF<sub>3</sub>Cl<sub>3</sub> reduction gave title optically pure diphosphines (R)-I and (S)-I.

Catalyst prepared by the reaction of (R)-I with [RuCl<sub>2</sub>(C<sub>6</sub>H<sub>6</sub>)<sub>2</sub>]2 enantioselectively reduced 3-oxo-ethylbutyrate to (R)-(-)-3-Et hydroxybutyrate.

OS.CITING REF COUNT: 24 THERE ARE 24 CAPUS RECORDS THAT CITE THIS RECOPO (30 CITINGS)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

16/590,140

L7 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2009 ACS on STN DUPLICATE 2  
ACCESSION NUMBER: 2002:508207 CAPLUS <<LOGINID:(20090727)>>  
DOCUMENT NUMBER: 137:317263  
TITLE: Free design of chiral diphosphine chelating ligands  
for stereoselective homogeneous catalysis by  
assembling five-membered aromatic heterocycles  
AUTHOR(S): Benincori, T.; Pizzo, S.; Sanniccolo, F.  
CORPORATE SOURCE: Dipartimento di Scienze Chimiche, Fisiche e  
Matematiche, Universita dell'Insubria, Como, 22100,  
Italy  
SOURCE: Journal of Heterocyclic Chemistry (2002), 39(3),  
471-485  
CODEN: JHICAD; ISSN: 0022-152X  
PUBLISHER: HeteroCorporation  
DOCUMENT TYPE: Journal; General Review  
LANGUAGE: English  
AB A review. Two very modular class of C2 and C1 diphosphine  
atropisomeric  
chelating ligands were designed. The most interesting features of  
these  
ligands were related to the possibility of modulating the electronic  
properties at phosphorus through the inherent electronic availability  
of  
five-membered aromatic heterocycles constituting the backbone. This  
modular  
design was very useful to tailor the structure of the ligand according  
to  
the requirements imposed by the reaction typol. and by the substrate.  
Evidence was given for the strong relationship existing between the  
electronic availability at phosphorus of the free ligands and the  
kinetic  
behavior of their metal complexes when employed as homogeneous  
chiral catalysts; the reaction rate of *exo*-ester hydrogenation  
was enhanced by metal complexes produced from electron-rich  
diphosphines, while enantioselective Heck reaction preferred catalysts  
originating from electron-poor ligands.  
CITING REF COUNT: 12 THERE ARE 12 CAPLUS RECORDS THAT CITE THIS  
RECORD (12 CITINGS)  
REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR  
THIS  
RECORD. ALL CITATIONS AVAILABLE IN THE RE  
FORMAT

L7 ANSWER 3 OF 3 CAPLUS COPYRIGHT 2009 ACS on STN DUPLICATE 3  
ACCESSION NUMBER: 1996:C59458 CAPLUS <<LOGINID:(20090727)>>  
DOCUMENT NUMBER: 104:317487  
ORIGINAL REFERENCE NO.: 104:56898h,56889a  
TITLE: Heteroaromatic diphosphines as chiral ligands  
INVENTOR(S): Antognazza, Patrizia; Benincori, Tiziana; Brenna,  
Elisabetta; Cesarotti, Edoardo; Sanniccolo, F.  
Francesco;